

### Remarks

Claims 7 – 9 and 15 – 17 are objected to over typographical errors in equations 1 – 4. The Applicants have reinserted the symbols into Claims 7, 9 and 15 in accordance with the Examiner's helpful suggestion to correct the typographical errors. Withdrawal of the objection is respectfully requested.

The Applicants have also amended Claims 7, 9 and 15 to recite that "ferrite" is "soft ferrite" and to clarify that the low temperature-transforming phase is "bainitic ferrite, bainitic martensite, bainite or mixtures thereof." Support may be found throughout the Applicants' specification such as in paragraph [0018] on page 7 and [0048] on page 15. Entry into the official file is respectfully requested.

Claims 7 – 9 and 17 stand rejected under 35 USC §103 over Asahi. The Applicants note with appreciation the Examiner's detailed comments hypothetically applying Asahi against those claims. The Applicants nonetheless respectfully submit that Asahi is inapplicable for the reasons set forth below.

The rejection frankly acknowledges that Asahi does not disclose a tubular article that contains ferrite at a volume fraction of about 5% to about 70% and the balance substantially composed of a low temperature transforming phase. The Applicants agree. The Applicants have nonetheless further clarified that the low temperature-transforming phase is bainitic ferrite, bainitic martensite, bainite or mixtures thereof. The rejection seeks to cure the deficiency of Asahi by stating that bainitic ferrite (BF) and ferrite (F) are essentially the same. The rejection also points to MPEP 2111 stating that the claims must be given their broadest possible interpretation and that limitations from the specification are not imported into the claims. The

Applicants do not take issue with MPEP 2111. However, the facts in this case compel a different conclusion.

The Applicants claim about 5% to about 70% volume fraction of soft ferrite, the balance substantially composed of bainitic ferrite, bainitic martensite, bainite or mixtures thereof. On the other hand, Asahi also discloses bainitic ferrite and ferrite. These are both terms of art and are recognized by those skilled in the art. Although bainitic ferrite may indeed be a type of ferrite, i.e., acicular, those skilled in the art recognize that they are two different items. The Applicants recognize this and Asahi recognized this.

The Applicants' specification on page 15, in paragraph [0048], contains expressions such as "soft ferrite," "a hard low temperature-transforming phase," "in the low temperature-transforming phase, bainitic ferrite is also contained" and "unless the content of C is less than 0.02% in the composition of the present invention, this bainitic ferrite is hardly formed." This indicates that the Applicants were well aware of the fact that bainitic ferrite and ferrite are distinctly different.

Asahi in the right column, in paragraph [0140] states: "If the coiling temperature becomes higher than 300°C, the structure becomes mainly ferrite, precipitation occurs, and the desired effect can no longer be obtained" and in paragraph [0144], "This is to make the microstructure of the steel pipe one or both of bainitic ferrite and bainite... Due to this, steel pipe is obtained which is excellent in strength and toughness" and in paragraph [0145], "With a heating temperature of under the  $Ac_3$  point [°C], ferrite remains and a high yield strength cannot be obtained." This makes it clear that Asahi was obviously aware of the differences between bainitic ferrite and ferrite and they disclosed a means of avoiding generation of low strength ferrite, namely, soft ferrite.

From the foregoing, it readily becomes apparent that the structure of the ferrite disclosed in Asahi is the same as that specified in Claims 7, 9 and 15 and is obviously different from bainitic ferrite.

The Applicants therefore respectfully submit that it is not permissible for the Patent Office to disregard the fact that the Applicants have chosen to be their own lexicographer and Asahi chose to be its own lexicographer, both lexicographers choosing exactly the same terms and determining that they deserved separate consideration. The rejection must accord the exact same meaning as the Applicants intended and Asahi intended.

In this instance, the rejection admits that Asahi discloses 0 to 100% bainitic ferrite and the balance substantially composed of bainite. That is not what the Applicants claim and not suggestive of what the Applicants claim. Instead, the Applicants claim about 30% to about 95% bainitic ferrite, bainitic martensite, bainite or mixtures thereof and the balance substantially composed of ferrite (although the Applicants actually claim about 5% to about 70% of the volume fraction of ferrite and the balance substantially composed of bainitic ferrite, bainitic martensite, bainite or mixtures thereof.) In any event, what the Applicants claim in Claims 7 – 9 and 17 is not the same as the 0 to 100% of bainitic ferrite and the balance substantially composed of bainite as taught by Asahi and is not suggested by Asahi.

As noted above, an objective of Asahi is to form a bainitic ferrite or bainite structure while eliminating ferrite from the structure. Further, in Claims 7, 9 and 15, ferrite and a low temperature-transforming phase (bainitic ferrite, bainite and martensite) are distinguished clearly as different substances.

As set forth on page 5, in the right column, from paragraphs [0144] to [0146], Asahi recommends quench and temper treatment to eliminate ferrite from the structure. In sharp

contrast, Claims 7, 9 and 15, as shown by steel pipe Nos. 18 and 20, tabulated in Table 3 of the Invention Examples given in the Applicants' specification, each of the steel pipes which are of quench tempered steel have yield ratios of 91% and 93% which are high. Each of the limits of expansion ratio is 31% and 33%, which are low and, therein, the targeted property is not secured where the targeted property is obtained is steel in an as-rolled state or is processed by normalizing treatment or dual-phase heat treatment. This is contradictory to the assertion of Asahi that as-rolled steel is deteriorated in terms of its properties.

In summary, according to Asahi, by conducting quench and temper treatment, ferrite is eliminated from the structure and a low temperature-transforming phase (bainitic ferrite and bainite) only is formed. In contrast, Claims 7, 9 and 15 are characterized in that, with an as-rolled state or through normalizing treatment or dual-phase heat treatment, soft ferrite and a low temperature-transforming phase (bainitic ferrite, bainite and martensite or mixtures thereof) are achieved.

Moreover, Asahi contains no Examples which correspond to Claims 7, 9 and 15. All the Examples in Table 3 are steel prepared by quench hardening, not by normalization treatment. Also, the term normalization tabulated in Table 2 of Asahi is normalization which was applied only to seam weld zones of electric resistance welded steel pipes and even heat treatment was not applied to the base pipe portions. Thus, the Applicants respectfully submit that Asahi is inapplicable to Claims 7 – 9 and 17. Withdrawal of the rejection is respectfully requested.

Claims 15 and 16 stand rejected under 35 USC §103 over the hypothetical combination of Kondo with Asahi. Kondo merely teaches an ordinary manufacturing process using a seamless steel tube manufacturing facility and does not teach a unique manufacturing process. There is no disclosure in Kondo at all of manufacturing steel having excellent pipe-expansion

properties by specifying the component and structure of steel as specified in Claims 7, 9 and 15. The Applicants respectfully submit that hypothetically applying the teachings of Kondo with Asahi does not cure the deficiency set forth above with respect to Asahi. The result of such a combination would still be an article containing 0 to 100% bainitic ferrite and the balance substantially composed of bainite. Again, that is not what the Applicants claim. Withdrawal of that rejection is also respectfully requested.

Claims 7 – 9 and 15 – 17 stand rejected under 35 USC §103 over Toyooka. The Applicants again note with appreciation the Examiner's detailed comments hypothetically applying Toyooka against those claims. The Applicants nonetheless respectfully submit that Toyooka fails to provide disclosure, teachings or suggestions that would lead to the subject matter of Claims 7 – 9 and 15 – 17. Details are set forth below.

As previously noted, the Applicants have amended Claims 7, 9 and 15 to clarify that the microstructure contains ferrite at a volume fraction of about 5% to about 70% and the balance substantially composed of bainitic ferrite, bainitic martensite, bainite or mixtures thereof. The Applicants respectfully submit that such a structure is sharply different from that taught by Toyooka and as acknowledged in the rejection which helpfully points to col. 9. In that regard, col. 9 teaches that the Toyooka steel pipe comprises “a texture based on ferrite grains having an average crystal diameter of 3  $\mu\text{m}$  or less” at lines 9 and 10. Then, col. 9 further teaches that the structure based on ferrite grains can include a structure containing solely ferrite and having no precipitation of the second phase and “a structure containing ferrite in a second phase other than ferrite.” This is taught at lines 25 – 29. Lines 30 – 31 and 44 – 47 teach that the second phase other than ferrite may be martensite, bainite and/or cementite.

The Applicants respectfully submit that such a structure is sharply different from what the Applicants claim. In that regard, the Applicants claim ferrite in one volume fraction and bainitic ferrite, bainitic martensite, bainite or mixtures thereof in another volume fraction. Further, Toyooka discloses in column 1, under the heading "Technical Field of the Invention," namely, "The present invention relates to a steel pipe containing super-fine crystal grains, which has excellent strength, toughness and ductility and superior collision impact resistance and a method for producing the same."

Also, Toyooka discloses in column 2, under the heading "Disclosure of the Invention," namely, "an art of a steel pipe raw material which diameter is reduced by warm drawing and is then applied for use as it is." Therefore, the Toyooka structure is a structure after the diameter of the raw material pipe is reduced by warm drawing. Further, the structure is controlled through reduction of diameter in warm drawing. Moreover, Toyooka is applicable to not only an electric resistance welded steel pipe, but also a seamless pipe, such as raw material pipe.

Such being the case, the method of manufacturing a steel pipe according to Claims 7, 9 and 15 and the pipe manufacturing method of Toyooka are completely dissimilar. The seamless pipe specified in Claims 7, 9 and 15 is in a state of a raw material for a steel pipe, before diameter reduction in warm drawing as in Toyooka, and no diameter reduction in warm drawing is applied to the raw material for a steel pipe.

In other words, in an ordinary seamless steel pipe-forming process (by rolling in a hot temperature range), such a method in Claims 7, 9 and 15, as set out in the Applicants' specification from page 21, at line 15 to page 23, at line 15, "final rolling is preferably finished at a temperature of 800°C or more so that a working strain is not allowed to remain," that is to say, rolling is conducted in a temperature range of higher than  $A_{c3}$  transformation point. In other

words, according to Claims 7, 9 and 15; reduction of diameter by warm drawing, as taught by Toyooka, is not performed. Withdrawal of the rejection is accordingly respectfully requested.

In light of the foregoing, the Applicants respectfully submit that the entire application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,



T. Daniel Christenbury  
Reg. No. 31,750  
Attorney for Applicants

TDC/sh  
(215) 656-3381